Marketing Research Report 12
A.E. & R.S. 233

April 1992

MONITORING THE SHIFT TOWARD LOWER FAT DAIRY PRODUCTS: 1991

by

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This research was supported in part by a special appropriation from the U.S. Congress administered by the U.S. Department of Agriculture

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EXECUTIVE SUMMARY

This study examined recent changes in consumers' use of frozen desserts, fluid milk and cheese. It is based on a telephone survey of 1206 adult men and women in the contiguous 48 states conducted in early Fall 1991.

Changes in Frozen Dessert Use

The two most widely used frozen desserts were both higher fat products: regular ice cream (used by 51 percent in the previous four weeks) and premium ice cream (used by 36 percent). Four lower fat products were less widely used: lowfat/nonfat frozen yogurt (32 percent); regular frozen yogurt (16 percent); lower fat frozen desserts including sherbet, ice milk and lite frozen desserts (26 percent); nonfat frozen desserts (8 percent). A total of 38 percent had used regular frozen yogurt or lowfat/nonfat frozen yogurt or both in the previous four weeks.

Those who had consumed a frozen dessert product in the last year were asked how their use had changed over the previous year. Decreases were more common for the two higher fat products, regular and premium ice cream, with 26 percent of the users reporting reduced consumption of each. Twenty-six percent of regular frozen yogurt users also reported reduced use. Those who cut their use of regular frozen yogurt were found to have been particularly likely to have increased their use of lowfat/nonfat frozen yogurt. Increases were common for lowfat/nonfat frozen yogurt, with 32 percent reporting increased use. Increases also were reported by 39 percent of nonfat frozen dessert users, but because the number of users was small (n=218), the actual numbers involved are limited.

Those who reported reduced use of regular ice cream were found to be more likely to report concern about their fat, cholesterol, sugar, calorie and calcium intakes. Reduced use of premium ice cream was associated with concern about fat, sugar and calorie intakes. Those who reduced their use of regular frozen yogurt were found to have been more likely to have reported fat concerns. Increased use of lowfat/nonfat frozen yogurt was more common among those concerned about their fat intakes. Changes in the use of lower fat frozen desserts were associated only with fat intake concerns. Changes in nonfat frozen dessert could not found to be linked to any of the dietary concerns considered.

Changes in frozen dessert use occurred throughout the adult population. In general, there was no clear pattern of change by demographic groups.

Changes in Cheese Use

Cheese was found to be widely used with 91 percent reporting at least occasional use. Those who expressed concern about fat, cholesterol and calories more frequently reported reduced use than did those who did not express these concerns. Those who indicated concern with their calcium intakes also were more likely to have reduced use. Changes in cheese use were associated with gender, race and age. Young people typically were increasing use while older people tended to be reducing use.

Changes in Milk Use

A major share (53 percent) of milk users reported use of lowfat milks, i.e., one- or two-percent milks. Whole milk use was reported by 25 percent and skim milk use by 20 percent. Those who reported making changes in milk use over the previous two to three years typically had shifted to the milk product which was next lowest in fat. That is, whole milk users who made changes typically shifted to lowfat while lowfat users who made changes typically shifted to skim.

Comparison of 1991 and 1990 Survey Results

The 1991 survey results were compared to those obtained from a survey in a similar period in 1990. In 1991, as in 1990, reduced use was reported more frequently by regular and premium ice cream users than by users of other products. These reports appear to represent cuts both in frequency of use and in serving size rather than elimination of the product from the diet.

The largest declines between 1990 and 1991 in percentages reporting use in the previous four weeks were for lower fat products: frozen yogurt, lower fat frozen desserts and nonfat frozen desserts. Declines were found not only in the numbers of users but also in the frequency of use of these products. Overall, the results suggest that the shift toward lower fat frozen desserts has peaked out.

The percentages using different types of milk changed little between 1990 and 1991. The results suggest that the shift toward lower fat milks has stabilized.

INTRODUCTION

The American public's dietary concerns have been tracked over time in a series of annual surveys for the Food Marketing Institute (Opinion Research Corp., 1991). Since the early 1980s there has been a continuing upward trend in the public's concern with the healthfulness of the food they buy and eat. This trend has been propelled by several factors:

* The increasing average age of the American public and resulting increases in health concerns

* The succession of new scientific findings on links between diet and chronic disease

* The heavy promotion of new food products on the basis of their dietary benefits (e.g., "no cholesterol," and "no salt")

Although the overall level of dietary concern has been trending upward, the specific focuses of concern have changed over the last decade. In the early 1980s chemical additives and preservatives were the most widely held concerns. Fat and cholesterol were seldom mentioned as concerns in the early 1980s, but by the early 1990s they were the most frequently mentioned concerns. In 1991, 42 percent of the adult food shoppers questioned indicated concern with the fat content of the foods they and their families eat (Opinion Research Corp., 1991). Some 37 percent indicated their concern with cholesterol content.

The increase in fat and cholesterol concerns has brought substantial changes in the consumption of dairy products. Usage of lowfat and skim milks has risen sharply. For several years now the combined sales of lowfat and skim milks has exceeded whole milk sales (Milk Industry Foundation, 1991). The continuation of this trend into the future is a major concern for the dairy industry. The 1991 consumer survey reported here and the 1990 survey which preceded it were designed to assess the trend toward lower fat dairy products and to assess the strength and persistence of this trend.

THE DATA

Data for the study were collected in a telephone survey in September 1991. Adult men and women age 18 and over living in the contiguous United States were questioned. Random digit dialing was used to ensure that both listed and unlisted telephone numbers were reached. A total of 1206 completed interviews was obtained, which represented 50.4 percent of the eligible households.

In order to include roughly equal numbers of men and women, once a household was contacted, the interviewer asked to speak to an adult male. Females were interviewed when no adult male was available or willing to cooperate. In the resulting sample, 55 percent of the respondents were women. Overall, whites, those with educations beyond 12th grade and those with household incomes of over $25,000 were overrepresented in the survey when comparisons are made to the U.S. population as a whole. Women were slightly overrepresented.

The respondents were questioned about their current use of frozen desserts and recent changes in their consumption. They also were questioned about their use of fluid milk and of cheese. The types of information collected in the 1991 survey are similar to those collected in a 1990 survey which was reported in Herrmann, Sterngold and Warland (1991).

CHANGES IN FROZEN DESSERT USE: 1991

The respondents were asked about their use of six major categories of frozen desserts in the previous four weeks. For survey purposes sherbet, ice milk and lite frozen desserts were treated as a single category. The questions about frozen yogurt asked separately about use of lowfat and nonfat frozen yogurt and about regular frozen yogurt. This distinction was made in order to investigate shifts between these two categories of frozen yogurt.

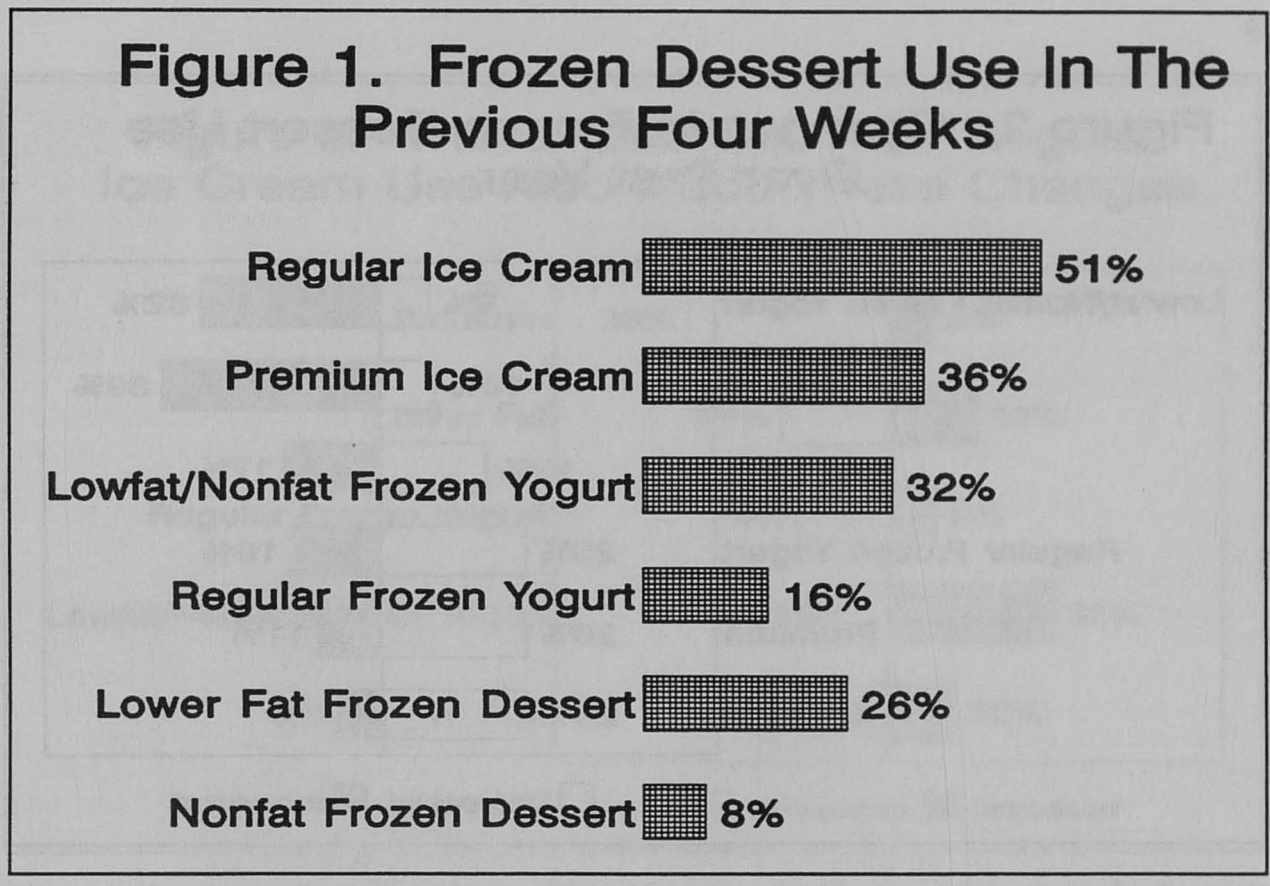
Usage was found to vary widely across the six frozen dessert product categories (see Figure 1). Regular ice cream was found to be the most widely used frozen dessert. Some 51 percent reported having consumed one or more servings of regular ice cream in the previous four weeks.

Premium ice cream was widely used, with 36 percent reporting use. Premium ice cream was explained to the respondents as a type of ice cream that is "higher-priced and has a creamier flavor."

Lowfat/nonfat frozen yogurt was the more popular of the two frozen yogurt categories, with 32 percent reporting use. Only half as many (16 percent) reported use of regular frozen yogurt. Frozen yogurt, taken as an overall category, was the second most widely used item, with 38 percent reporting use of regular frozen or lowfat/nonfat frozen yogurt or both.

A smaller number (26 percent) had eaten one of the lower fat frozen desserts (sherbet, ice milk or lite frozen dessert) in the previous four weeks. Nonfat frozen desserts were not so widely used, only 8 percent reported any use.

Respondents who had used a particular product in the past year were asked how their consumption had changed from a year earlier. The responses indicated decreases in the use of higher fat frozen



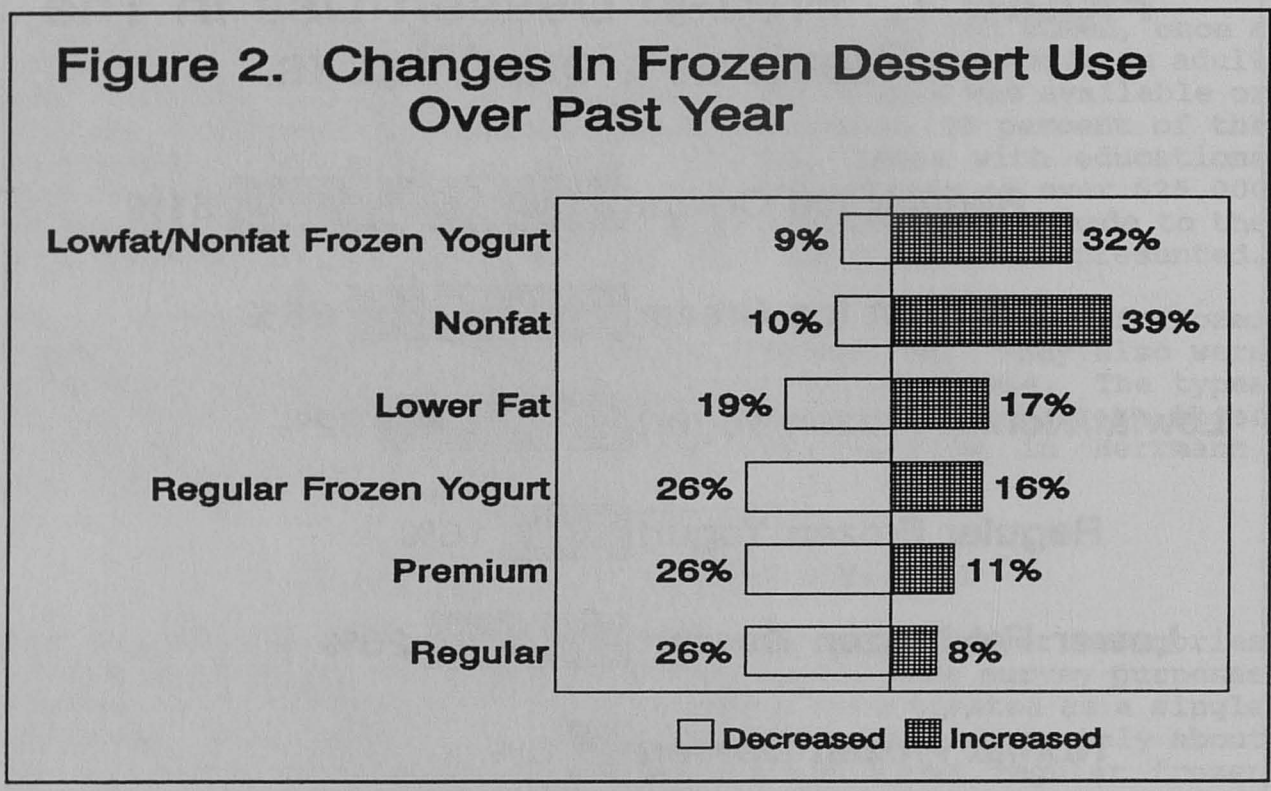
desserts and increases in the use of items which are lower in fat (see Figure 2). Users of lowfat/nonfat frozen yogurt and nonfat frozen desserts were the most likely to report increased use, while over a quarter of the users of regular and premium ice cream and regular frozen yogurt reported reduced use.

The dramatic increases in the past few years in the use of frozen yogurt may raise questions about whether the product has a group of loyal users or simply will be a short-lived fad. To check on product loyalty, frozen yogurt eaters were asked to compare the taste of frozen yogurt to that of regular ice cream. Slightly less than a fourth (23 percent) said that frozen yogurt tastes better than regular ice cream. Another half (49 percent) said the two products taste equally good. Another fourth (26 percent) said that regular ice cream tastes better while 2 percent were not sure what they thought. These responses seem to suggest a sizable and loyal following for frozen yogurt.

Changes in the Use of Regular Ice Cream

As reported earlier, regular ice cream was the most widely used of the frozen desserts studied with 51 percent of the survey respondents reporting they had eaten it in the previous four weeks. When the users (n=894) were asked about changes in their use over the past year, most (66 percent) indicated that their usage had remained the same. However, many more of those questioned

Figure 2. Changes In Frozen Dessert Use Over Past Year



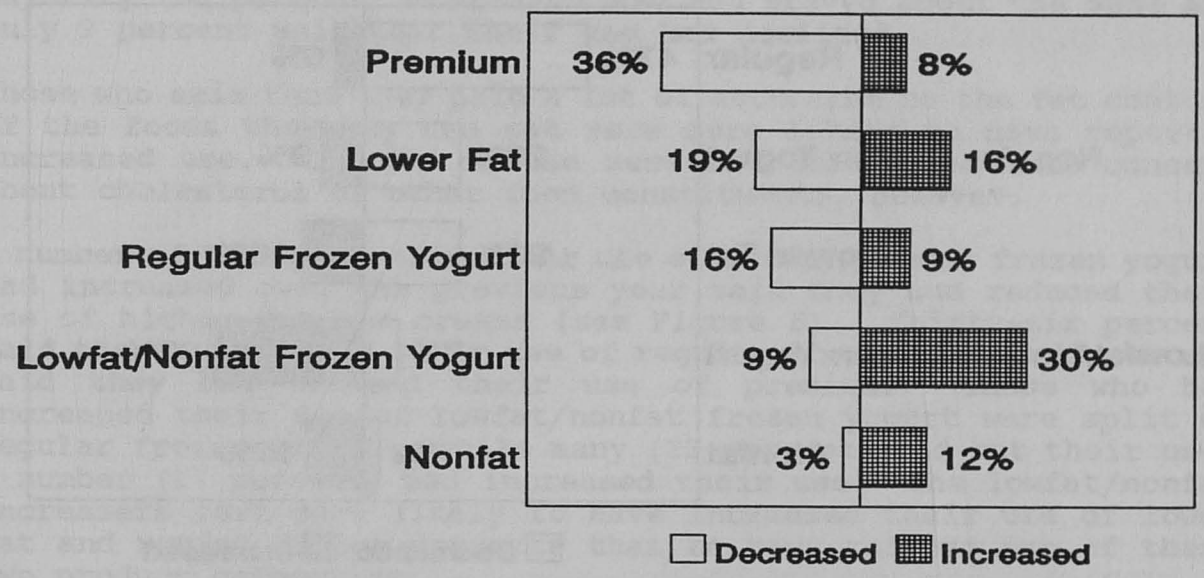
reported reduced use (26 percent) than reported increased use (8 percent).

Reduced use was reported more frequently among those who indicated they were paying a lot of attention to the fat, cholesterol, sugar, calories and calcium in the foods they buy and eat (statistical test results are reported in Appendix I). Reduced use also was reported more frequently among those who said their doctor had advised them to cut the fat and cholesterol in their diet or that they had decided to do this on their own.

All the respondents were asked if they had cut their use of regular or premium ice cream in the last year or two because they wanted to cut down on fat and cholesterol. Some 43 percent of the respondents indicated that they had made such cuts. When asked for details about these cuts, 35 percent said they had completely stopped eating the two products, while 65 percent said they had cut the quantity consumed. Of the those who cut quantity, 67 percent said they had cut the size of the servings they ate and 77 percent said they had cut down the number of servings they ate.

Cuts in the use of regular ice cream were linked to cuts in the use of other higher fat products (see Figure 3). Of those who said they had reduced their use of regular ice cream over the previous year, over one-third (36 percent) also had cut their use of premium ice cream. Smaller numbers reported reduced use of lower fat frozen desserts and regular frozen yogurt. At the same time, many

Figure 3. Those Who Cut Their Regular Ice Cream Use Also Made These Changes



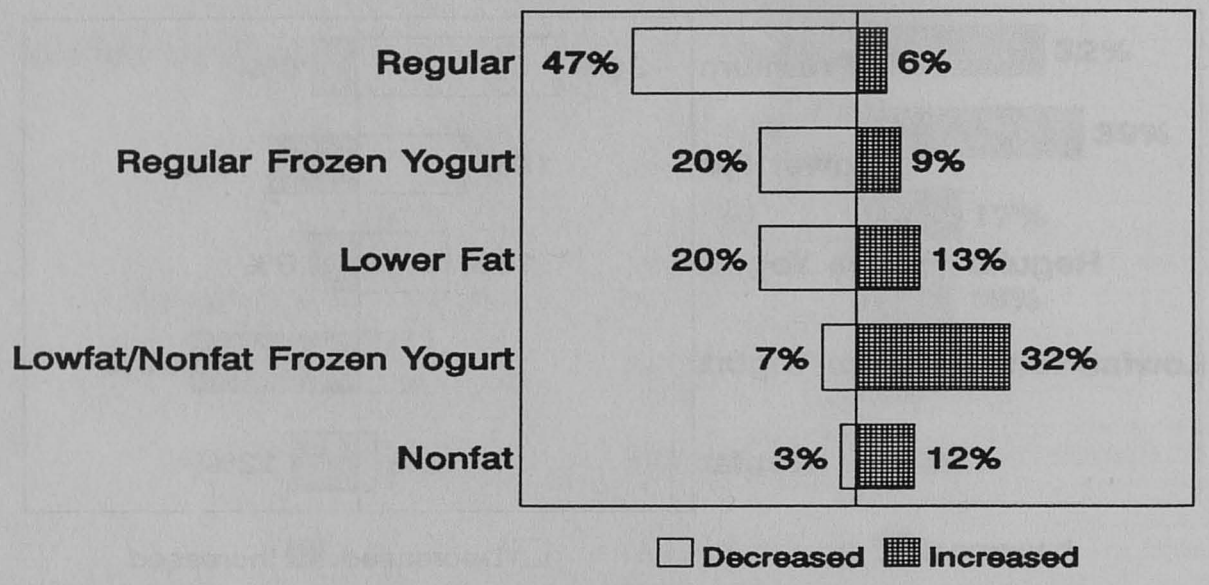
of those who had cut their use of regular ice cream had increased their use of lowfat/nonfat frozen yogurt. Thirty percent reported such increases. Lower fat and nonfat frozen desserts do not appear to have benefitted greatly from reduced regular ice cream use. Sixteen percent of those who had reduced regular ice cream use reported increased use of lower fat frozen desserts and only 12 percent reported increased use of nonfat frozen desserts.

Changes in the use of regular ice cream were not restricted to any one demographic group. There were no significant differences in changes by income, race, education or gender. Some differences were noted among different age categories. Those 56 and over were more likely to have reported their use had remained the same while those 18-25 were more likely to have reported they had either increased or decreased use.

Changes in Premium Ice Cream Use

Premium ice cream was the second most widely used frozen dessert product with 36 percent reporting use over the previous four weeks. Over one quarter of premium users (n=689) reported that their use of premium ice cream had declined from a year earlier (Figure 4). Most (63 percent) said their use had remained the same and only 11 percent said their usage had increased.

Figure 4. Those Who Cut Their Premium Ice Cream Use Also Made These Changes



As was the case with regular ice cream, reduced use of premium ice cream was more common among those who indicated that they were paying a lot of attention to the fat, sugar and calories in the food they buy and eat. Changes in use were not, however, associated with cholesterol concern. Reductions also were more common among those who said that their doctor had advised them to cut the fat and cholesterol in their diets or that they had decided to do this on their own.

Reduced use of premium ice cream was associated with reports of reduced use of other higher fat frozen desserts (see Figure 4). Among those who reported reduced use of premium ice cream, almost half (47 percent) also reported reduced use of regular ice cream. Lowfat/nonfat frozen yogurt appears to have been the main beneficiary of reduced premium ice cream use. Among the premium reducers, 32 percent reported increased use of lowfat/nonfat frozen yogurt.

Cuts in the use of premium ice cream occurred more frequently among women than among men. Otherwise these changes were not associated with age, income, education, or race.

Changes in Lowfat and Nonfat Frozen Yogurt Use

Lowfat and nonfat frozen yogurt use were combined in a single category separate from regular frozen yogurt for this study.

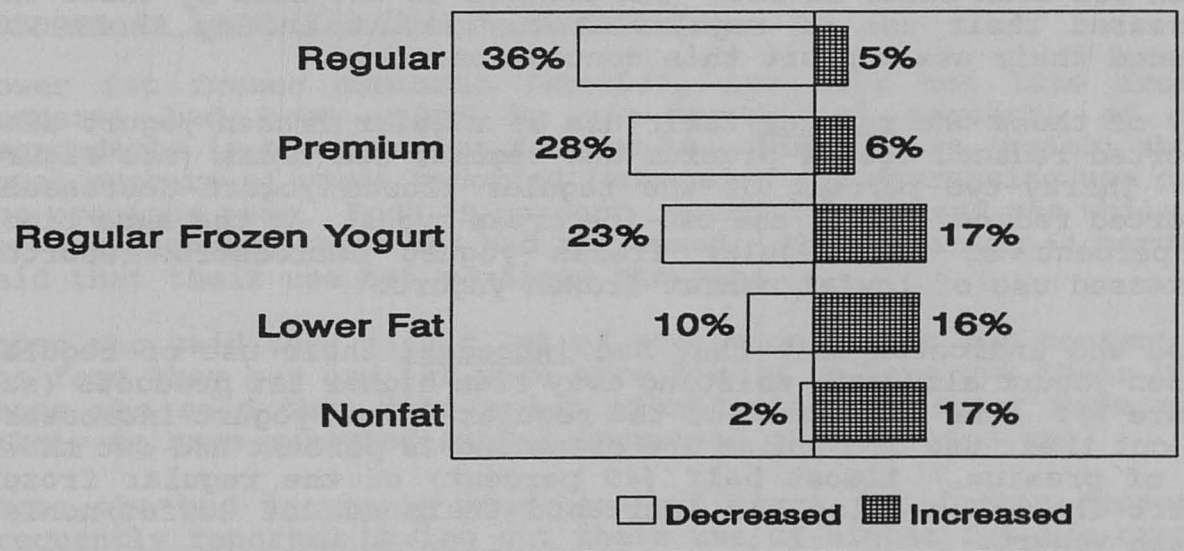
Lowfat and nonfat frozen yogurt were eaten by 32 percent of those surveyed.

Almost one-third (32 percent) of the lowfat/nonfat users (n=615) said that their use had increased over the previous year. The majority (59 percent) said their use had stayed about the same and only 9 percent said that their use had declined.

Those who said that they paid a lot of attention to the fat content of the foods they buy and eat were more likely to have reported increased use. Changes in use were not associated with concern about cholesterol or other food constituents, however.

A number of those who said their use of lowfat/nonfat frozen yogurt had increased over the previous year said they had reduced their use of higher fat ice creams (see Figure 5). Thirty-six percent said they had reduced their use of regular ice cream and 28 percent said they had reduced their use of premium. Those who had increased their use of lowfat/nonfat frozen yogurt were split on regular frozen yogurt: while many (23 percent) had cut their use, a number (17 percent) had increased their use. The lowfat/nonfat increasers were more likely to have increased their use of lower fat and nonfat frozen desserts than to have reduced use of these two product categories.

Figure 5. Those Who Increased Their Use of Lowfat/Nonfat Frozen Yogurt Use Also Made These Changes



Individuals with more formal education (16 years or more) were more likely to have either increased or reduced their use of lowfat/nonfat frozen yogurt than were those with less formal education. Whites were more likely to have reported increased use than nonwhites.

Changes in Regular Frozen Yogurt Use

Fewer respondents reported use of regular frozen yogurt (n=425) than of the lower-fat and nonfat forms of the product. A total of 16 percent of the respondents said they had eaten regular frozen yogurt in the previous four weeks. Regular frozen yogurt use appears to be undergoing subtantial changes with some users reporting reduced use while, at the same time, others are reporting increased use over the previous year:

Decreased use	26 percent
Increased use	16 percent
Same use	58 percent

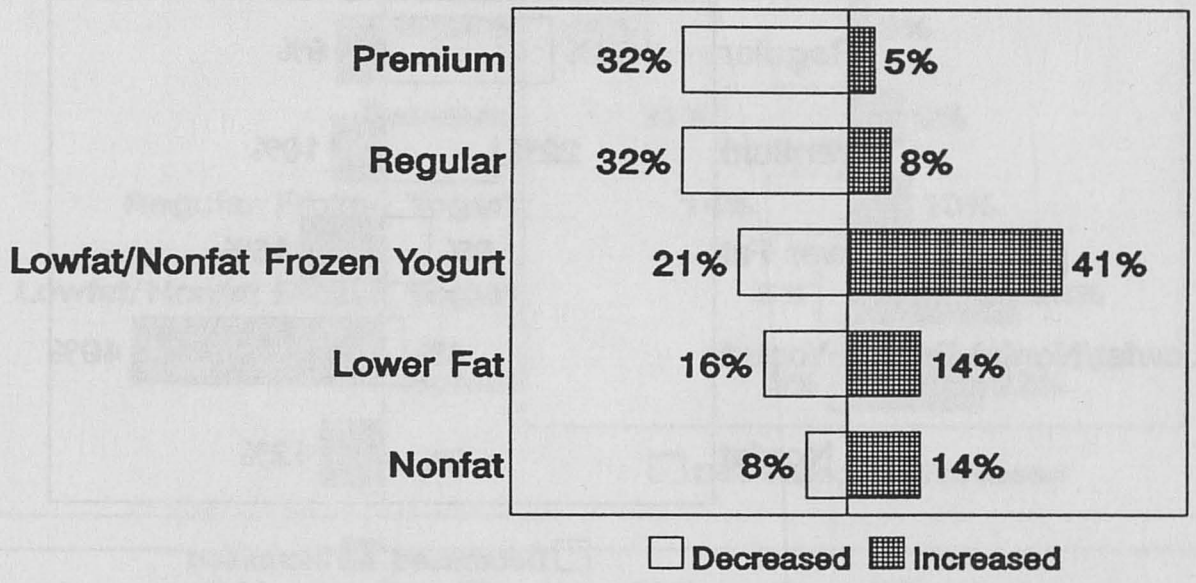
Those who reported reduced use were more likely to have reported they paid a lot of attention to the fat content of the food they buy and eat. Those who said their doctor had advised them to reduce their fat and cholesterol intake or who had decided to do this on their own were more likely to have either increased or to have cut their use of regular frozen yogurt over the previous year.

This finding suggests that some people were switching to regular frozen yogurt because it is lower in fat than regular and premium ice cream while others were switching away to other frozen desserts which are even lower in fat. The changes in use made by those who increased their use of regular frozen yogurt and by those who reduced their use support this conclusion.

Many of those who reduced their use of regular frozen yogurt also reported reduced use of premium and regular ice cream (see Figure 6). Thirty-two percent of the regular frozen yogurt decreasers reported reduced use of the two ice cream types. At the same time, 41 percent of the regular frozen yogurt decreasers reported increased use of lowfat/nonfat frozen yogurt.

Those who indicated that they had increased their use of regular frozen yogurt also were shifting away from higher fat products (see Figure 7). Some 33 percent of the regular frozen yogurt increasers had cut their use of regular ice cream and 22 percent had cut their use of premium. Almost half (49 percent) of the regular frozen yogurt increasers also had increased their use of lowfat/nonfat frozen yogurt.

Figure 6. Those Who Cut Their Use of Regular Frozen Yogurt Also Made These Changes



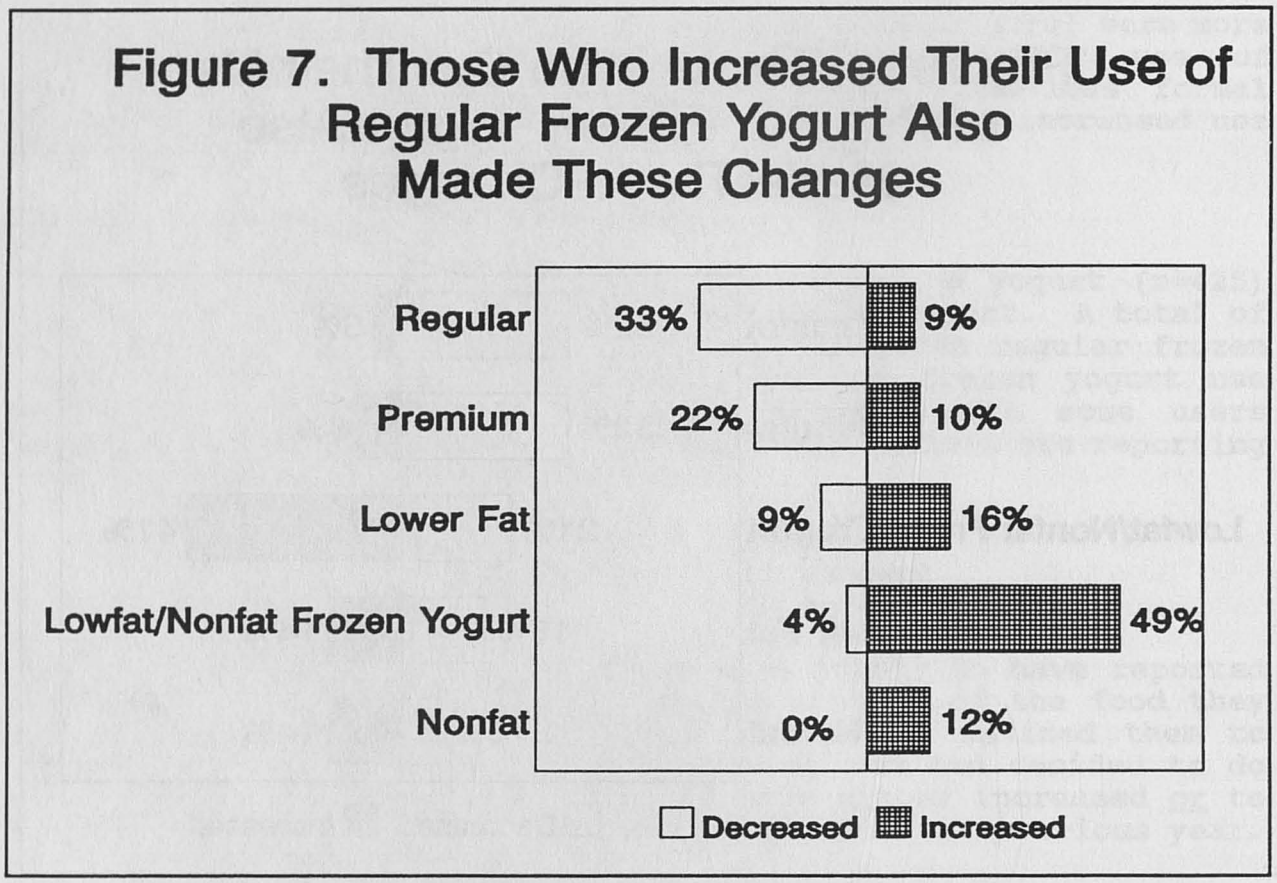
Women were somewhat more likely to have reduced their use of regular frozen yogurt than were men. Otherwise, changes in use were not signficantly related to age, education, income or race.

Changes in Lower Fat Frozen Dessert Use

Lower fat frozen desserts (sherbet, ice milk and lite frozen dessert) had been eaten by one-fourth (26 percent) of the respondents in the previous four weeks. Among users (n=643) about equal numbers of users reported increasing and decreasing use over the previous year. Some 19 percent reported decreased use while 17 percent reported their use had increased. The remaining 64 percent said that their use had remained the same.

Those who said they paid a lot of attention to the fat content of the food they buy and eat were more likely to have cut their use. Those who said they paid a lot of attention to sugar were more likely to have reported either increased or decreased use.

Those who had increased their use of lower fat frozen desserts frequently reported having cut their use of higher fat ice creams (see Figure 8). Thirty-four percent of the increasers reported reduced use of regular ice cream and 21 percent reported reduced use of premium. At the same time the increasers reported increased



use of other lower fat products. Over one-fourth (28 percent) reported increased use of lowfat/nonfat frozen yogurt. Almost one-fourth (22 percent) reported increased use of nonfat frozen desserts.

Those who reported that they had reduced their use of lower fat frozen desserts over the previous year also frequently had reduced their use of higher fat ice creams (see Figure 9). Their reduced use did not, however, appear linked to any clear-cut pattern of shifts to other products.

Changes in the use of lower fat frozen desserts were not linked to any of the demographic variables used.

Changes in Nonfat Frozen Dessert Use

Nonfat frozen desserts were not widely used in the group surveyed (n=218). Only 8 percent reported use in the previous four weeks. Those using the product were, however, typically either increasing their use or holding it at the same level. A total of 39 percent said their use had increased over the previous year and another 51 percent said their use had remained the same. Only 10 percent said their use had declined.

Figure 8. Those Who Increased Their Use of Lower Fat Frozen Desserts Also Made These Changes

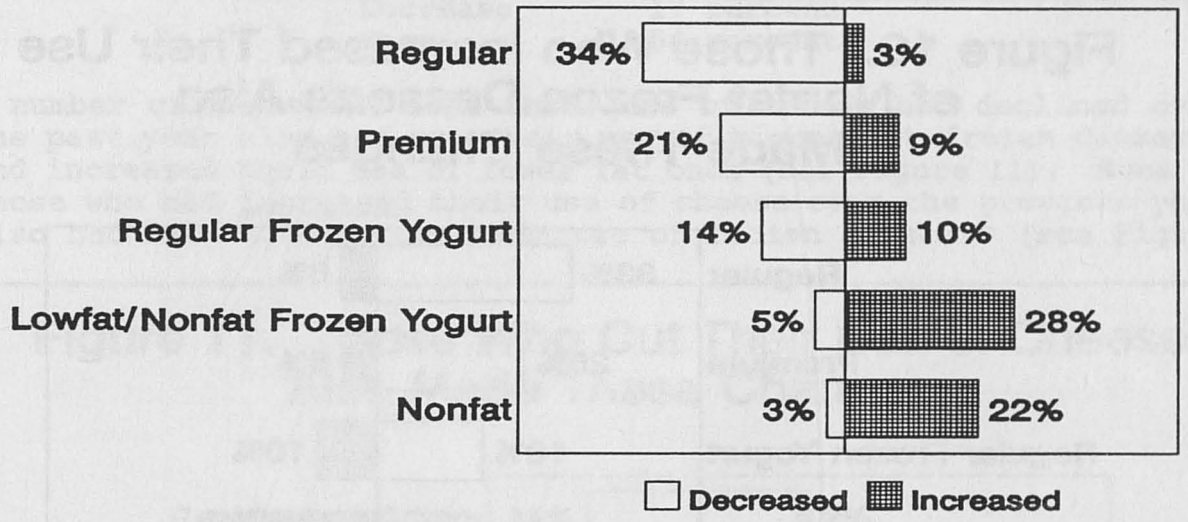
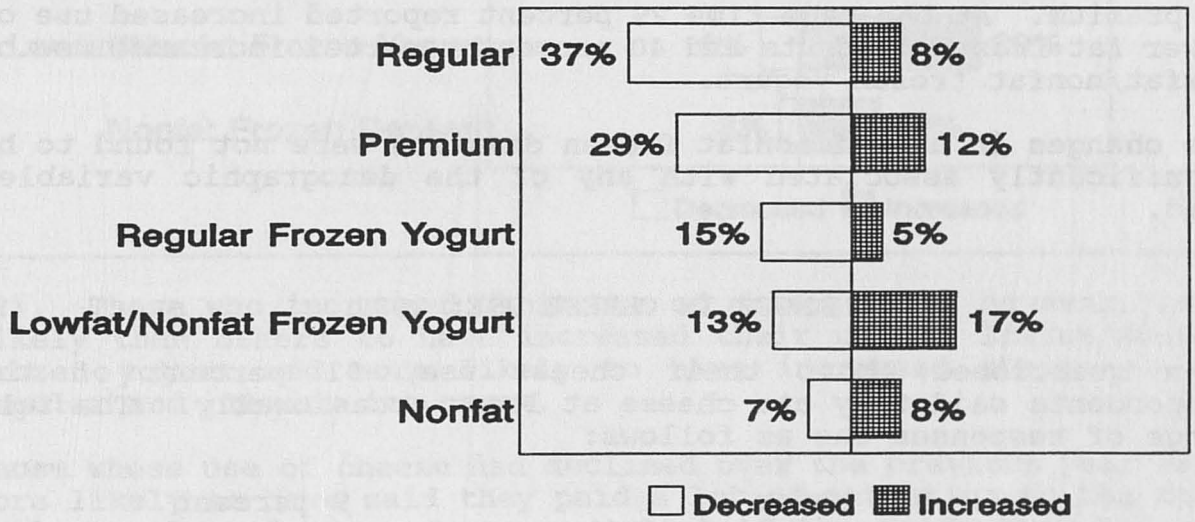
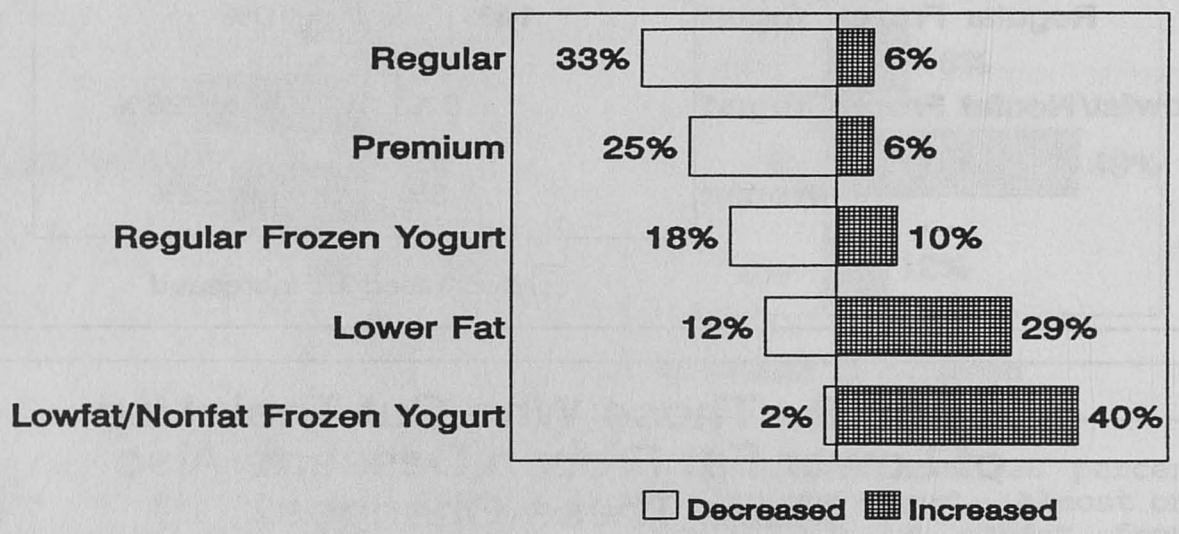


Figure 9. Those Who Cut Their Use of Lower Fat Frozen Desserts Also Made These Changes



No links were found between changes in usage and dietary concerns. Those who reported increased use of nonfat frozen desserts frequently reported decreased use of higher fat frozen desserts and increased use of other low fat frozen desserts (see Figure 10). One-third (33 percent) of the increasers reported reduced use of regular ice cream and one-fourth (25 percent) reported reduced use

Figure 10. Those Who Increased Their Use of Nonfat Frozen Desserts Also Made These Changes



of premium. At the same time 29 percent reported increased use of lower fat frozen desserts and 40 percent reported increased use of lowfat/nonfat frozen yogurt.

The changes in use of nonfat frozen desserts were not found to be significantly associated with any of the demographic variables used.

CHANGES IN CHEESE USE: 1991

When questioned about their cheese use, 91 percent of the respondents said they ate cheese at least occasionally. The full range of responses was as follows:

Never	9 percent
Once in a while	23 percent
A few times per week	37 percent
Almost every day	17 percent
Every day	14 percent

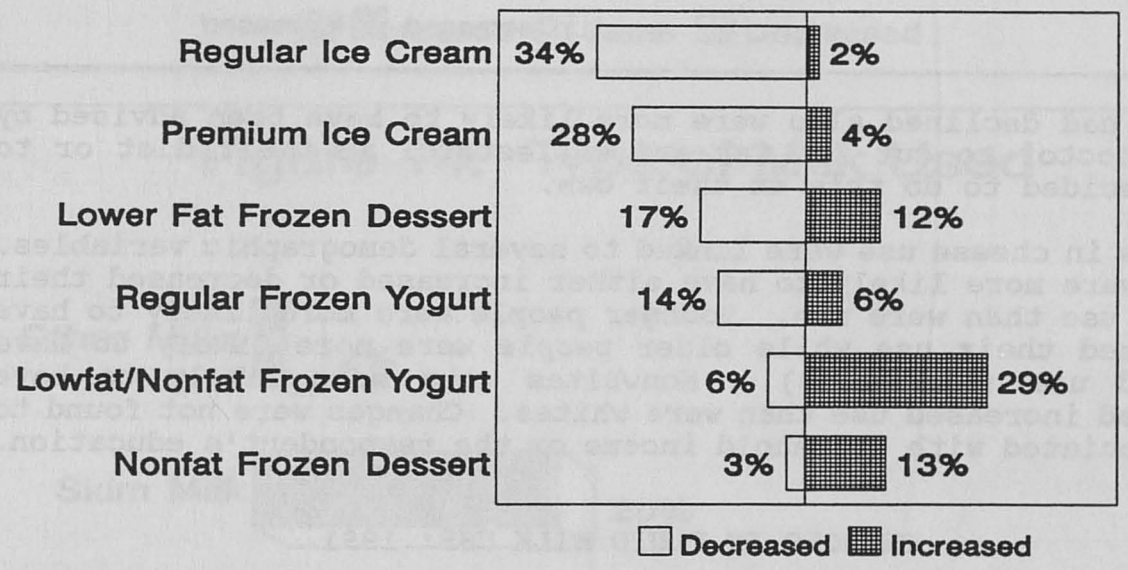
The responses indicate that over two-thirds of the user respondents (n=1091) were fairly regular cheese users (more than once a week).

When asked about how their use of cheese had changed over the past year, the responses were as follows:

Increase	17 percent
Decrease	17 percent
Same	66 percent

A number of those who said their use of cheese had declined over the past year also had cut their use of higher fat frozen desserts and increased their use of lower fat ones (see Figure 11). Some of those who had increased their use of cheese over the previous year also had made changes in their use of frozen desserts (see Figure

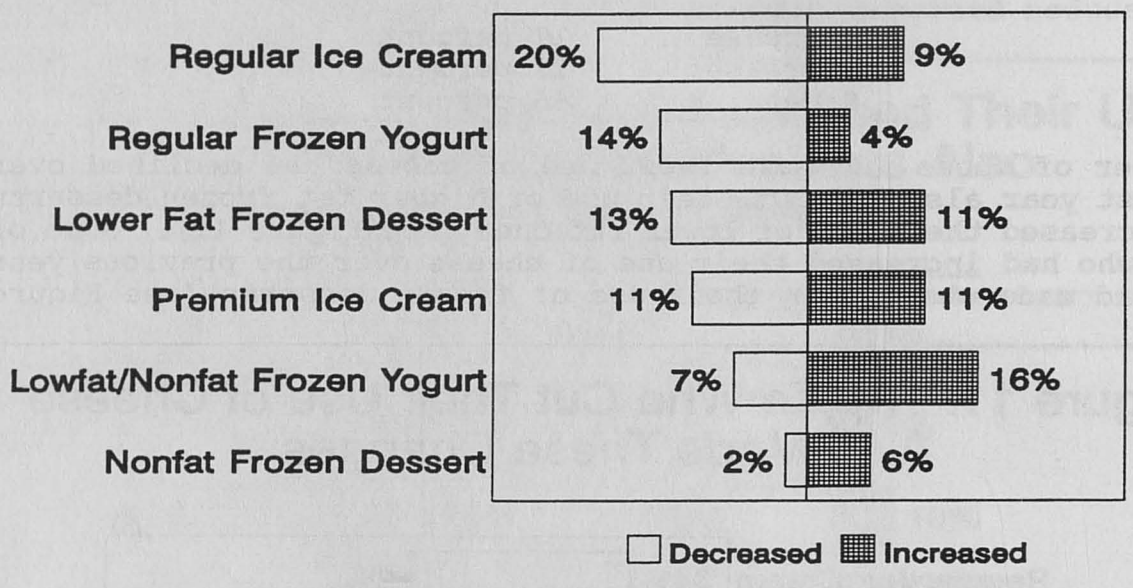
Figure 11. Those Who Cut Their Use of Cheese Also Made These Changes



12). Those who increased their use of cheese were, however, less likely than others to have increased their use of lowfat/nonfat frozen yogurt and more likely to have increased their use of regular and premium ice cream.

Those whose use of cheese had declined over the previous year were more likely to have said they paid a lot of attention to the fat, cholesterol, calorie and sugar content of the foods they buy and eat. Somewhat surprisingly those whose cheese use had declined also were more likely to have said they pay a lot of attention to the calcium content of the foods they eat. Those whose use of

Figure 12. Those Who Had Increased Their Use of Cheese Also Made These Changes



cheese had declined also were more likely to have been advised by their doctor to cut the fat and cholesterol in their diet or to have decided to do this on their own.

Changes in cheese use were linked to several demographic variables. Women were more likely to have either increased or decreased their cheese use than were men. Younger people were more likely to have increased their use while older people were more likely to have reduced use (Figure 13). Nonwhites were more likely to have reported increased use than were whites. Changes were not found to be associated with household income or the respondent's education.

CHANGES IN FLUID MILK USE: 1991

The respondents who currently were using milk were asked what type they used. Over half (53 percent) of the adults surveyed said they used chiefly lowfat milks (one and two percent milks). Whole milk users constituted only one-fourth of current users (Figure 14). Skim users (20 percent) constituted most of the remainder, while users of other types of milk made up two percent.

The respondents who indicated they currently were using milk also were asked about their milk use two or three years earlier. The responses indicated substantial shifts toward lower fat fluid milks over the two or three year period (see Figure 15).

Figure 13. Change in Cheese Use in Different Age Categories

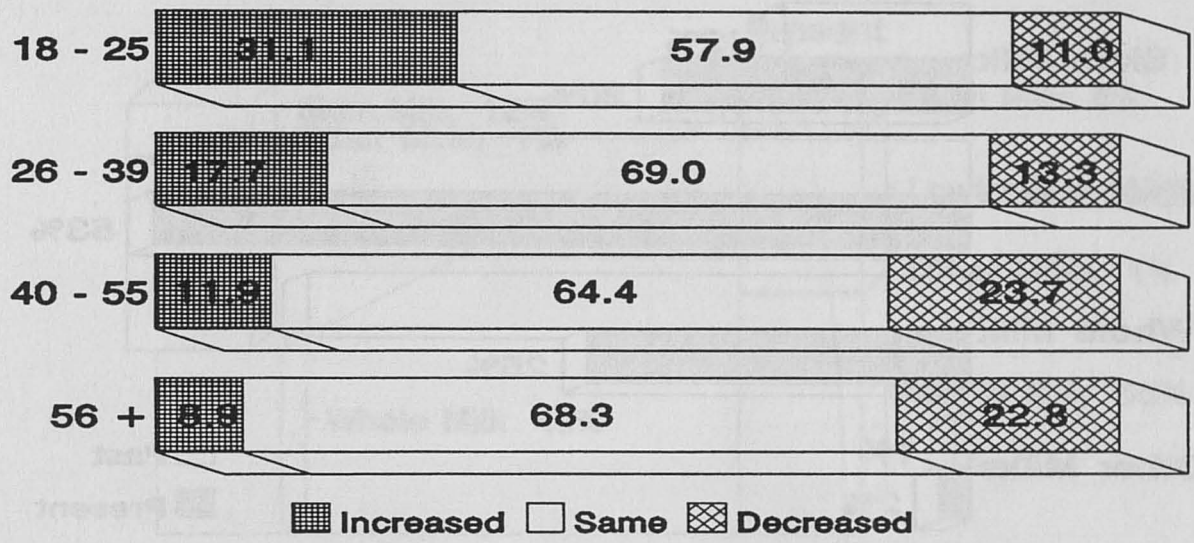
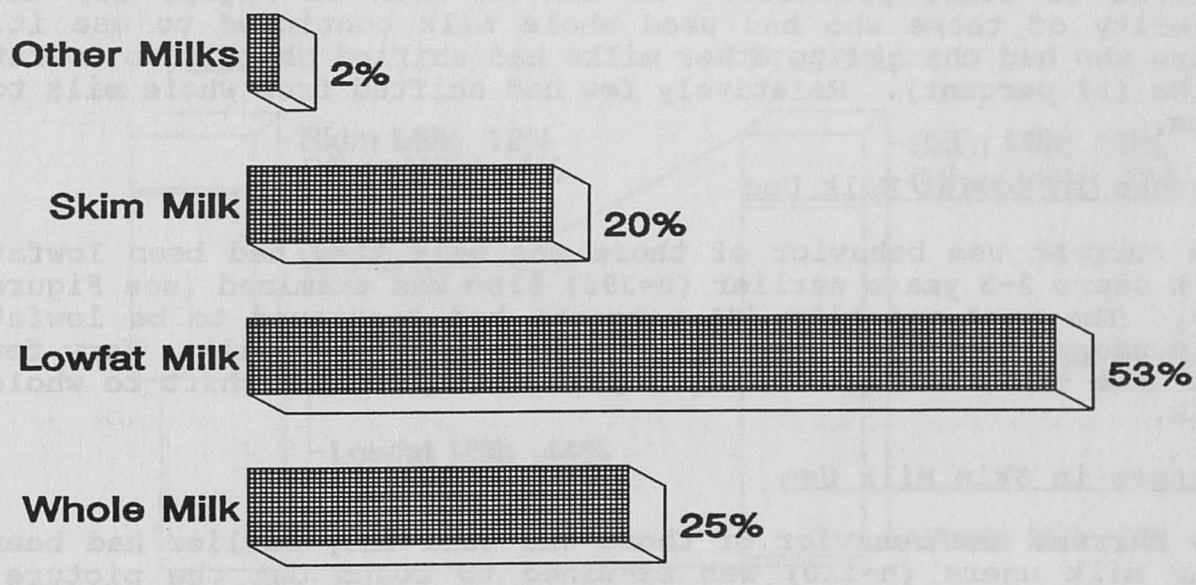
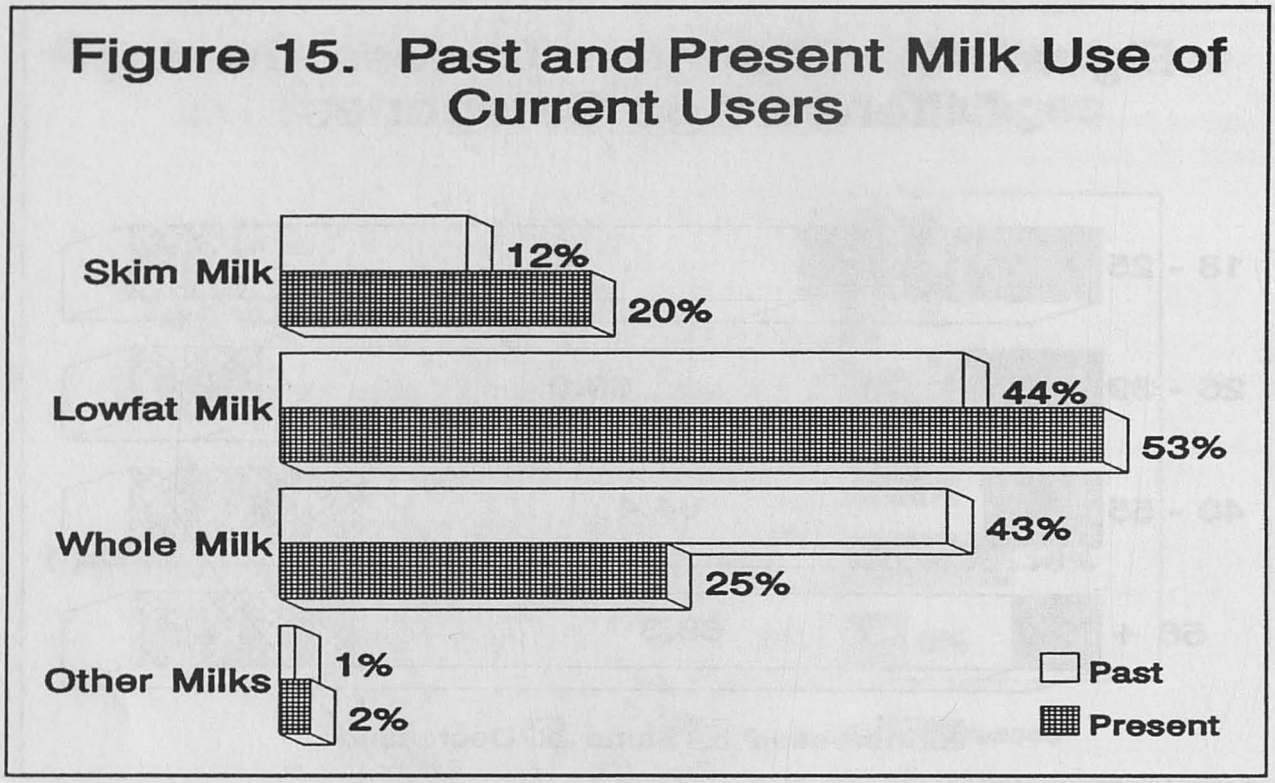


Figure 14. Type of Milk Used





Changes in Whole Milk Use

The current use behavior of those who said they had been whole milk users 2-3 years earlier (n=385) was examined. This allows us to identify those who continued to use whole milk and those who shifted to other products. As can be seen in Figure 16, the majority of those who had used whole milk continued to use it. Those who had changed to other milks had shifted chiefly to lowfat milks (37 percent). Relatively few had shifted from whole milk to skim.

Changes in Lowfat Milk Use

The current use behavior of those who said they had been lowfat milk users 2-3 years earlier (n=398) also was examined (see Figure 17). The vast majority (81 percent) had continued to be lowfat milk users. Some (15 percent) had shifted to skim milk. Very few had made other changes. Only 2 percent reported a shift to whole milk.

Changes in Skim Milk Use

The current use behavior of those who said they earlier had been skim milk users (n=110) was examined to round out the picture. Almost all (90 percent) had continued to be skim milk users (Figure 18). A few had shifted to higher fat milks, 6 percent had shifted to lowfat milk and 3 percent had shifted to whole milk.

Figure 16. Current Milk Use of Past Whole Milk Drinkers

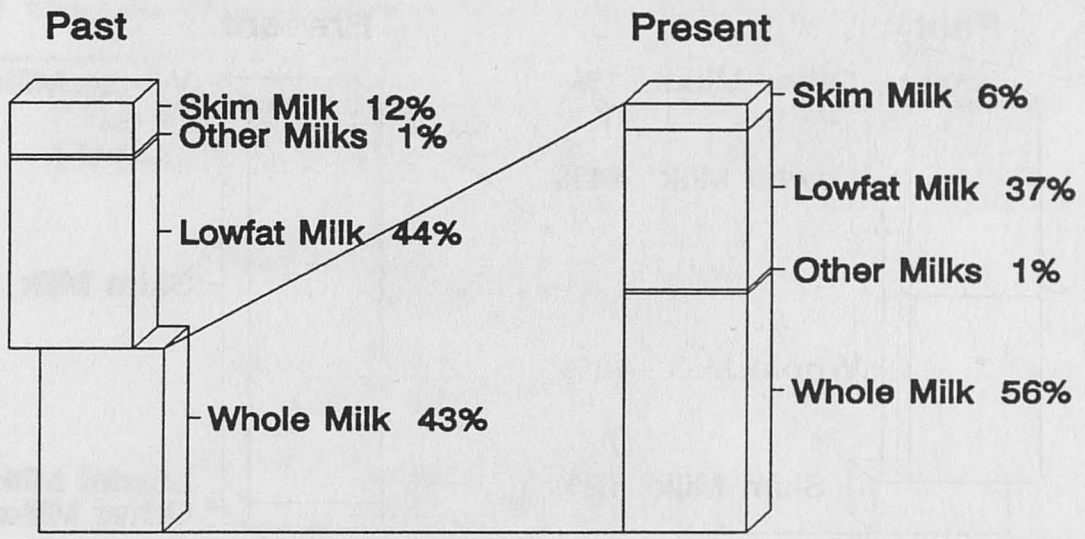


Figure 17. Current Milk Use of Past Lowfat Milk Drinkers

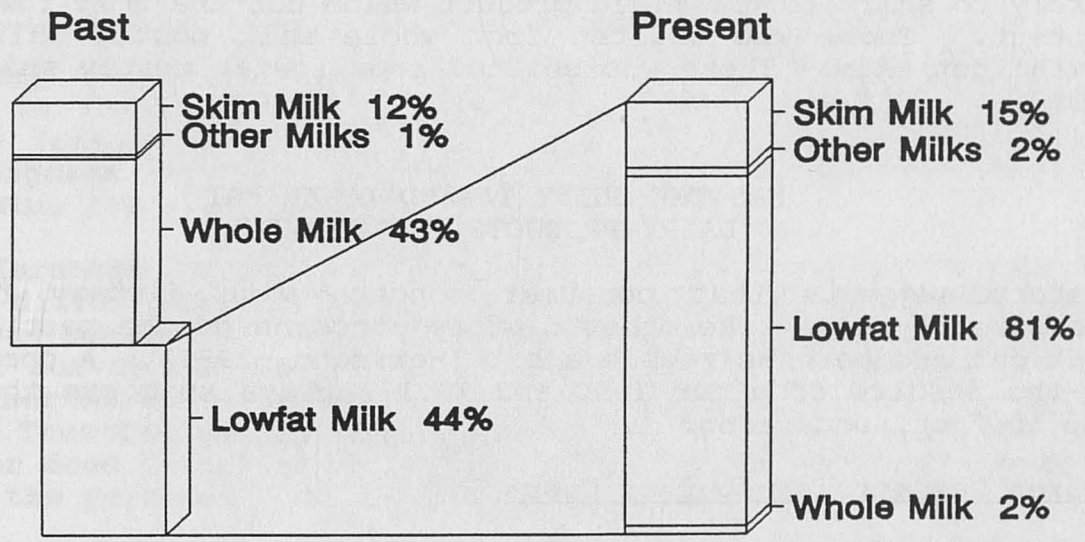
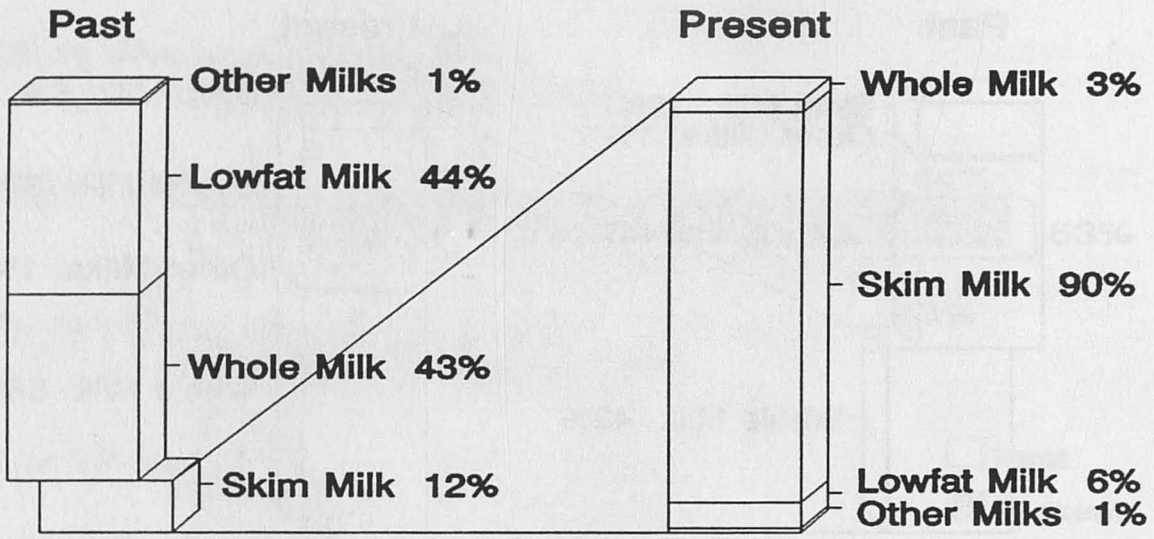


Figure 18. Current Milk Use of Past Skim Milk Users



An Overview of Changes in Milk Use

The pattern of changes in milk use is the same one observed in our 1990 survey. Most of those who consumed a particular type of milk were likely to stick with it. Those who did make changes were most likely to shift to the fluid product which has the next lowest fat content. Those who shifted from whole milk mostly shifted to lowfat not skim. Those who shifted from lowfat mostly shifted to skim.

HAS THE SHIFT TOWARD LOWER FAT DAIRY PRODUCTS PEAKED OUT?

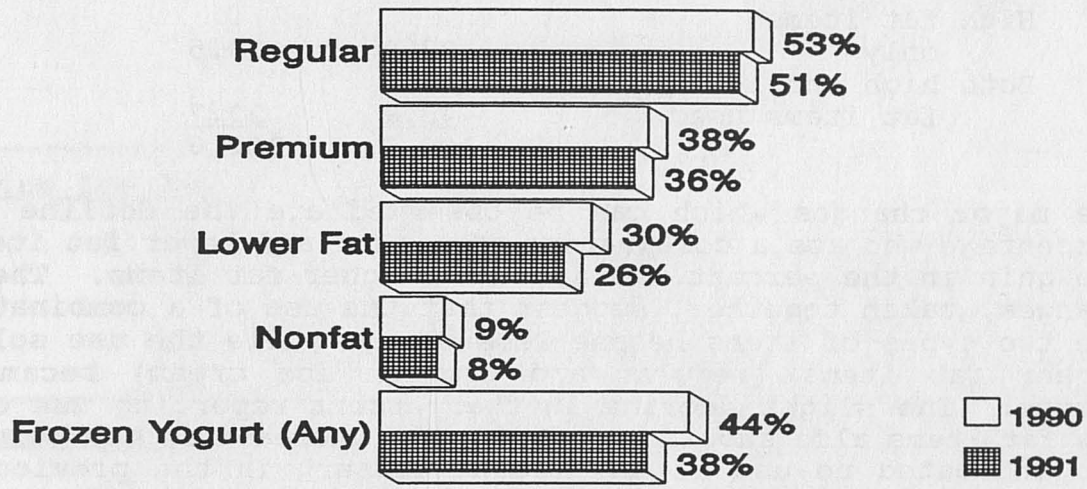
History suggests that consumer concern with dietary fat and cholesterol will, like other dietary concerns of the past decade, peak out and perhaps recede a bit (Herrmann, 1991). A comparison of the results from our 1990 and 1991 surveys suggests that this is, in fact, occurring.

Frozen Desserts: Number of Users

To assess changes in frozen dessert use we need to look both at the number of users and at the frequency of use.

A comparison of the usage results for 1990 and 1991 indicates that none of the frozen dessert categories were as widely consumed in 1991 as in 1990. The percentages reporting use in the 1991 survey all are somewhat below those found in the 1990 survey (see Figure 19). The biggest difference between the two years is the percentage reporting use of any frozen yogurt. In 1990, 44 percent reported the use of frozen yogurt in the previous four weeks. In

Figure 19. Frozen Dessert Use In The Previous Four Weeks: 1990 and 1991



Source: 1990 data from Herrmann, Sterngold and Warland (1991).

1991, only 38 percent reported use. The difference suggests a decline in interest in this lower fat item. Lower fat frozen desserts (sherbets, ice milk and lite frozen desserts) had the second biggest decline. The declines in percent using for regular and premium ice cream were notably smaller.

The differences between the 1990 and 1991 results may be due in part to differences in the timing of the two surveys. The 1990 survey was conducted in August at the height of the summer season. The 1991 survey was conducted about a month later, in September. The weather continued warm throughout the country during the survey period. Thus timing does not seem to fully the declines in percent using nor does it explain why lower fat items experienced a bigger drop in the percentage of users than did higher fat items.

Another way to assess changes in the use of frozen desserts is to look at the percentages who used or did not use any higher fat item in the four weeks prior to the survey and to also look at the percentages of those who used and did not use any lower fat item in

the four weeks prior to the survey. Use of regular and premium ice cream was used as the basis for a higher fat category, while use of lower fat frozen desserts (regular frozen yogurt, lowfat/nonfat frozen yogurt, sherbet, ice milk, lite frozen dessert and nonfat frozen dessert) was used as the basis for the lower fat category. When the use and non-use of these two general categories in the previous four weeks is taken into account the result is four categories:

	1990	1991
No frozen desserts eaten	14.0 %	17.6%
Lower fat items only	16.1	15.2
High fat items only	27.0	33.5
Both high and low fat items used	42.9	33.7
	100.0	100.0

The major changes which can be observed are the decline in the percentage who ate a combination of higher and lower fat items and the gain in the percent who ate only higher fat items. These two changes, taken together, suggest that the use of a combination of the two types of items became less common while the use solely of higher fat items (regular and premium ice cream) became more common. The slight decline in the percent reporting use of only low fat items also should be noted. The increase in the percentage who indicated no use of any frozen dessert in the previous four weeks also is significant. These results support the conclusion that the number of users of lower fat frozen desserts has declined.

Frozen Desserts: Frequency of Use

Changes in the frequency of use occurred along with changes in the percentage of users. Earlier we noted that the percentages reporting use of each of the five major frozen dessert categories had declined between 1990 and 1991 (see Figure 19). One reason for this decline in users in the four-week period covered by the survey may be that the five products were used more infrequently in 1991 than in 1990. As can be seen in Table 1, the percentage of users (i.e., individuals who had consumed a product in the past year) who had not consumed the product in the previous four weeks increased in all five product categories.

The frequency of use pattern for regular ice cream changed little between 1990 and 1991 except for the increase in the percentage who had not consumed the product in the previous four weeks. For premium ice cream, the frequency of use trended downward with increases in the percent who had not consumed the product in the previous four weeks and decreases in the percentages of both more and less frequent users.

Table 1. Frequency of Frozen Dessert Use in the Previous Four Weeks by Users*: 1990 and 1991

	1990	1991
Regular Ice Cream		
0	29%	31%
1	18	18
2	18	18
3	8	8
4	9	7
5+	18	18
Premium Ice Cream		
0	31%	37%
1	22	19
2	17	16
3	6	8
4	8	8
5+	16	12
Frozen Yogurt		
0	33%	36%
1	24	15
2	17	15
3	7	7
4	8	9
5+	11	18
Lower Fat Frozen Dessert		
0	43%	50%
1	20	18
2	12	13
3	7	6
4+	18	13
Nonfat Frozen Dessert		
0	40%	54%
1	25	18
2	11	11
3	7	6
4+	17	11

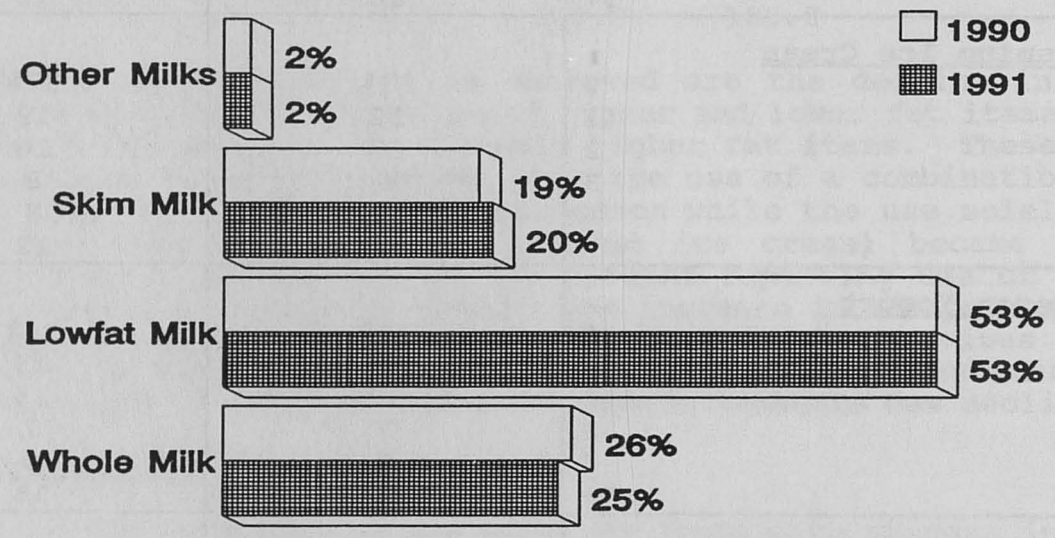
* Anyone who had consumed the product in the past year.

Frozen yogurt (all types) gained some frequent users (five or more servings in the previous four weeks) but lost less frequent users. Lower fat and nonfat frozen desserts lost both more and less frequent users.

Fluid Milk: Numbers of Users

The use figures for fluid milk for 1991 are little different from those for 1990 (Figure 20). The percentages reporting use of skim increased slightly while the percent reporting use of lowfat remained the same. This similarity in results for the two years suggests that the shift toward lower fat milks has slowed or ended.

Figure 20. Type of Milk Used: 1990 and 1991



Source: 1990 data from Herrmann, Sterngold and Warland (1991).

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APPENDIX I. Statistical Tests of Significance

Variables	Chi-Square Statistic	Degrees of Freedom	Probability
Change in Regular Ice Cream Use (X)			
Dietary Concern (n=892)			
Fat Concern	36.52	6	.00
Cholesterol Concern	30.11	6	.00
Calorie Concern	41.13	6	.00
Sugar Concern	32.91	6	.00
Calcium Concern	18.80	6	.00
Doctor Advised Fat/Chol. Cut	10.20	2	.01
Decided on Fat/Chol. Cut on Own	17.93	2	.00
Usage Change (n=894)			
Premium Ice Cream	157.30	6	.00
Low Fat/Nonfat Frozen Yogurt	60.36	6	.00
Regular Frozen Yogurt	31.74	6	.00
Lower Fat Frozen Dessert	55.39	6	.00
Nonfat Frozen Dessert	19.36	6	.00
Demographics			
Sex (n=894)	1.99	2	.37
Age (n=883)	13.06	6	.04
Race (n=886)	5.11	2	.08
Education (n=888)	10.76	6	.10
Income (n=734)	10.98	10	.36

APPENDIX I. Statistical Tests of Significance (Continued)

Variables	Chi-Square Statistic	Degrees of Freedom	Probability
Change in Premium Ice Cream Use (X)			
Dietary Concern (n=688)			
Fat Concern	23.02	6	.00
Cholesterol Concern	10.48	6	.11
Calorie Concern	18.21	6	.01
Sugar Concern	18.97	6	.00
Calcium Concern	9.36	6	.15
Doctor Advised Fat/Chol. Cut	13.19	2	.00
Decided on Fat/Chol. Cut on Own	19.28	2	.00
Usage Change (n=689)			
Regular Ice Cream	149.37	6	.00
Lowfat/Nonfat Frozen Yogurt	38.90	6	.00
Regular Frozen Yogurt	28.03	6	.00
Lower Fat Frozen Dessert	30.15	6	.00
Nonfat Frozen Dessert	10.84	6	.09
Demographics			
Sex (n=689)	7.77	2	.02
Age (n=678)	11.70	6	.07
Race (n=682)	1.25	2	.54
Education (n=684)	4.04	6	.67
Income (n=579)	6.10	10	.81

APPENDIX I. Statistical Tests of Significance (Continued)

Variables	Chi-Square Statistic	Degrees of Freedom	Probability
Change in Lowfat/Nonfat Frozen Yogurt Use (X)			
Dietary Concern (n=615)			
Fat Concern	13.97	6	.03
Cholesterol Concern	4.45	6	.62
Calorie Concern	7.39	6	.29
Sugar Concern	8.76	6	.19
Calcium Concern	8.72	6	.19
Doctor Advised Fat/Chol. Cut	.57	2	.75
Decided on Fat/Chol. Cut on Own	4.23	2	.12
Usage Change (n=615)			
Regular Ice Cream	34.04	6	.00
Premium Ice Cream	22.63	6	.00
Regular Frozen Yogurt	106.45	6	.00
Lower Fat Frozen Dessert	22.33	6	.00
Nonfat Frozen Dessert	35.34	6	.00
Demographics			
Sex (n=615)	.82	2	.66
Age (n=604)	1.70	6	.95
Race (n=608)	11.10	2	.00
Education (n=594)	16.09	6	.01
Income (n=509)	13.62	10	.19

APPENDIX I. Statistical Tests of Significance (Continued)

Variables	Chi-Square Statistic	Degrees of Freedom	Probability
Change in Regular Frozen Yogurt Use (X)			
Dietary Concern (n=424)			
Fat Concern	20.56	6	.00
Cholesterol Concern	1.92	6	.93
Calorie Concern	10.31	6	.11
Sugar Concern	6.68	6	.35
Calcium Concern	5.76	6	.45
Doctor Advised Fat/Chol. Cut	7.07	2	.03
Decided on Fat/Chol. Cut on Own	7.01	2	.03
Usage Change (n=425)			
Regular Ice Cream	22.07	6	.00
Premium Ice Cream	22.19	6	.00
Lowfat/Nonfat Frozen Yogurt	109.85	6	.00
Lower Fat Frozen Dessert	4.80	6	.57
Nonfat Frozen Dessert	20.18	6	.00
Demographics			
Sex (n=425)	8.24	2	.02
Age (n=415)	3.62	6	.73
Race (n=419)	1.26	2	.53
Education (n=422)	6.37	6	.38
Income (n=343)	15.77	10	.11

APPENDIX I. Statistical Tests of Significance (Continued)

Variables	Chi-Square Statistic	Degrees of Freedom	Probability
Lower Fat Frozen Dessert Change (X)			
Dietary Concern (n=642)			
Fat Concern	13.69	6	.03
Cholesterol Concern	7.90	6	.25
Calorie Concern	11.48	6	.08
Sugar Concern	23.84	6	.00
Calcium Concern	7.26	6	.30
Doctor Advised Fat/Chol. Cut	3.63	2	.16
Decided on Fat/Chol. Cut on Own	2.97	2	.23
Usage Change (n=643)			
Regular Ice Cream	53.39	6	.00
Premium Ice Cream	28.46	6	.00
Lowfat/Nonfat Frozen Yogurt	23.45	6	.00
Regular Frozen Yogurt	6.31	6	.39
Nonfat Frozen Yogurt	41.43	6	.00
Demographics			
Sex (n=643)	.33	2	.85
Age (n=635)	11.48	6	.08
Race (n=634)	3.73	2	.16
Education (n=635)	4.73	6	.58
Income (n=524)	4.84	10	.90

APPENDIX I. Statistical Tests of Significance (Continued)

Variables	Chi-Square Statistic	Degrees of Freedom	Probability
Nonfat Frozen Dessert Change (X)			
Dietary Concern (n=218)			
Fat Concern	11.42	6	.08
Cholesterol Concern	2.56	6	.86
Calorie Concern	8.41	6	.21
Sugar Concern	12.27	6	.06
Calcium Concern	4.11	6	.66
Doctor Advised Fat/Chol. Cut	.45	2	.80
Decided on Fat/Chol. Cut on Own	4.71	2	.10
Usage Change (n=218)			
Regular Ice Cream	13.96	6	.03
Premium Ice Cream	6.75	6	.34
Lowfat/Nonfat Frozen Yogurt	36.36	6	.00
Regular Frozen Yogurt	18.82	6	.00
Lower Fat Frozen Dessert	38.55	6	.00
Demographics			
Sex (n=218)	.17	2	.92
Age (n=210)	3.86	6	.70
Race (n=213)	2.00	2	.37
Education (n=215)	7.63	6	.27
Income (n=178)	10.53	10	.40

APPENDIX I. Statistical Tests of Significance (Continued)

Variables	Chi-Square Statistic	Degrees of Freedom	Probability
Cheese Use Change (X)			
Dietary Concern (n=1089)			
Fat Concern	60.80	6	.00
Cholesterol Concern	43.32	6	.00
Calorie Concern	38.72	6	.00
Sugar Concern	30.97	6	.00
Calcium Concern	14.03	6	.03
Doctor Advised Fat/Chol. Cut	48.35	2	.00
Decided on Fat/Chol. Cut on Own	19.92	2	.00
Usage Change (n=1091)			
Regular Ice Cream	64.44	6	.00
Premium Ice Cream	49.74	6	.00
Lowfat/Nonfat frozen Yogurt	47.44	6	.00
Regular Frozen Yogurt	15.17	6	.02
Lower Fat Frozen Dessert	22.55	6	.00
Nonfat Frozen Dessert	22.55	6	.00
Demographics			
Sex (n=1091)	15.64	2	.00
Age (n=1071)	58.45	6	.00
Race (n=1077)	9.76	2	.01
Education (n=1079)	8.92	6	.18
Income (n=886)	14.14	10	.17